The influence of chess training on pupils' self-efficacy , self-esteem and social anxiety

Peng Jianguo^{1,a}, Jia Wenying^{1,b,*}, Hu Zhigang^{2,c}, Niu Zhou¹

¹Beijing Normal University , Zhuhai , Institute of education , Zhuhai , Guangdong , China

²Jinding No.1 primary school, Zhuhai , Guangdong , China

Abstract: **Background** With the 2001 announcement about three chess games in school, go, Chinese chess and chess, the three upsurge of popularity is set off in the country. Chess started late in China and was originally considered as an intellectual sport related to intelligence. Its role in psychological characteristics has not received enough attention from people. **Objective** In order to study the influence of chess training on pupils' self-efficacy, self-esteem and social anxiety. **Methods** 121 pupils from Jinding No.1 primary school are selected as study subjects and divided into experimental group and control group. The experiment group is the community group of 31 pupils, and the control group is the non-community group of 90 pupils. Using General Self-Efficacy Scale, Self-Esteem Scale, and Social Anxiety Scale for Children, the scales are used to test, and the pupils are observed and the teachers and parents are interviewed. **Results** There are significant differences in self-efficacy, self-esteem and social anxiety between the community and the non-community pupils. **Conclusion** It shows that a certain intensity of chess training has a greater impact on pupils' self-efficacy, self-esteem and social anxiety.

1 Introduction

In March 2001, the Ministry of Education issued the Notice on Developing Go, Chess and Chess Activities in Schools, which set off a wave of popularization of chess in primary and secondary schools throughout the country. The influence of chess games on the psychological characteristics of primary and secondary school students has also attracted the attention of relevant scholars, but the research mainly focuses on Go. Chess started late in China and was originally regarded as a competitive sport related to intelligence. Its unique function in mental health has not attracted enough attention from relevant departments or researchers in related fields. After consulting the relevant literature^[1-14], we found that the current research on chess is still few relatively, which mainly focused on the study of Go, and the research mainly focused on intelligence, academic performance and other aspects, and the research on mental health is few relatively. To sum up, taking pupils as the research object, this paper mainly explores the development and changes of pupils after chess training in the three aspects of self-efficacy, self-esteem and social anxiety.

2 Research objects and methods

2.1 Research object

A total of 121 subjects were selected in Jinding No.1 primary school. There were 31 students in the experimental group, 15 boys, 16 girls, three grade 17, and 14 grade four students. The control group consisted of 90 men, 45 boys, 45 girls, three grade 49, and 41 grade four students.

2.2 Research method

From September 2016 to June 2017, the experimental group received professional chess community training, while the control group did not learn chess.

2.2.1 Researcher qualification

A research group consisting of five students majoring in psychology and under the guidance of teachers majoring in psychology. The school hired International Master Liang Zhihua and Chess Federation master Zhang Xiaopeng to teach chess courses to students. The training includes basic rules, tactics, etiquette and culture of chess. Training criteria: The experimental group has a high level of chess skills, and can participate in regional and

*Corresponding author ^a pjianguo@126.com, ^b13466842372@163.com, ^c871084613@qq.com

higher level competitions.

2.2.2 Research program

The experimental group were some good students in chess who were selected from the third and fourth grades by the school. Besides basic training in the first and second grades, they also had two hours of professional training every Wednesday afternoon. The control group was randomly selected from grade three or four, who had not contacted with international chess training.

2.2.3 Research process control

The research team members and experts designed and guided the overall research process. Experts develop and implement training programmes and evaluate them after each training. Research team members organize and assist experts, observe and record the research process, and interview teachers and parents.

2.3 Research method

Before and after chess training, the researcher sent out questionnaires, explained and filled in methods and answered the questions raised by the subjects. The questionnaires were sent out uniformly, and then checked and recovered on the spot after completion of the questionnaires. 121 questionnaires were distributed before and after training, with a recovery rate of 100%.

2.3.1 General Self-Efficacy Scale

General Self-Efficacy Scale (GSES) [15] . The

Table 2 Comparison of social anxiety, self-esteem and self-efficacy between the experimental group and the control group

group	social anxiety			self-esteem			self-efficacy		
	Pretest	Posttest	Result	Pretest	Posttest	Result	Pretest	Posttest	Result
EG	2.00±2.19	1.06±1.39	-0.94±1.79	16.84±4.23	15.26±4.15	-1.58±4.19	28.87±6.55	32.94±6.37	4.07±6.47
CG	5.67±3.50	4.20±3.15	-1.47±3.40	21.71±4.07	18.44±4.43	-3.27±4.07	24.64±4.83	27.51±4.95	2.97±6.32
t	-6.80***	-7.56***	0.83	-5.76***	-3.51**	1.77	3.30**	4.32***	0.76

(Note:***P<0.001, **P<0.01, *P<0.05, Result : Variance analysis results)

Independent sample t-test analysis showed that in the pre-test, the level of social anxiety in the experimental group was significantly lower than that in the control group, and the level of self-esteem in the experimental group was significantly lower than that in the control group. On the level of self-efficacy, the experimental group was significantly higher than that of the control group. In the post-test, covariance analysis showed that the experimental group was significantly lower than the control group at the level of social anxiety, lower than the control group at the level of self-esteem, and significantly higher than the control group at the level of self-efficacy.

questionnaire consists of 10 items. The higher the score, the higher the general self-efficacy level. The Chinese version of GSES has been proved to have good reliability and validity.

2.3.2 Self-esteem scale

Self -esteem scale (SES) [16]. SES Chinese version is currently the most frequently used and most widely used self esteem measurement tool in China. The questionnaire consisted of 10 items. The higher the score, the higher the level of self-esteem. A large number of studies have shown that the scale has good reliability and validity. Dobson and Fleming have reported respectively that the alpha coefficient of the scale is 0.77 and 0.88.

2.3.3 Social Anxiety Scale for Children

Social Anxiety Scale for Children(SASC) [17]. SASC is a tool to measure children's social difficulties. The questionnaire consists of 10 items, which are divided into two dimensions: fear of negative evaluation and social avoidance and distress. It is scored at three levels. The Cronbach's alpha value of SASC is 0.76.

2.4 Data processing

SPSS19.0 was used to do descriptive statistical analysis, independent sample t test and covariance test.

3 Result analysis

4 Discussion

4.1 Reason of the significant differences between the experimental group and the control group

The experimental group showed a significant advantage over the control group in terms of social anxiety and self-efficacy. Through observation and interviews, according to the size of students' friendship range and different ways of making friends, we can divide them into talking about chess, practicing chess, playing chess and meeting chess friends again.

(1) Talking about chess: At the beginning of school,

students like to talk with others about chess-related topics. If there are many topics, it is easy to talk together and become friends. (2) Practicing chess: In the spare time, students will choose to practice chess with the children around them, because they practice chess with each other, so that strangers become friends. (3) Playing chess: When students' chess skills reach a certain level, they will go out to participate in competitions. The platform of making friends in this stage is much larger than that in the previous two stages, and the objects of communication are more complex. (4) meeting chess friends again: This stage is actually the distillation of the third stage. Because of a better platform, students can recognize more strangers, promote their ability to make friends, thus reduce social anxiety.

The level of self-efficacy in the experimental group was significantly higher than that in the control group, indicating that chess training is very helpful to improve self-efficacy. Under the traditional standard, most teachers and parents unilaterally measure students' performance. By studying chess, they can break the single standard of students' self-evaluation, gain the experience of success or failure in addition to academic performance, and increase students' self-confidence. Students with high level of chess often become objects of praise and role models. The positive evaluation of them by the people around them helps to improve students' self-efficacy, maintain a positive emotional attitude, have a relatively high understanding and evaluation of themselves, and have a higher level of Self-confidence to accomplish something.

The self-esteem level of the experimental group was lower than that of the control group. Through interviews, we learned that according to the level of students' chess skills, the club is divided into two classes and adopts the promotion and elimination system. Students who participate in the community will receive more attention to pressure and be more sensitive to the surrounding information. The self-evaluation and recognition system established in this environment has certain instability, and the self-esteem structure established by it is more fragile and unstable, so the data of self-esteem level may be a certain decline. When they compare their achievements with the members of the same society, others are better than themselves, they will have lower self-evaluation, which will reduce self-esteem.

4.2 Reason of no significant differences between the experimental group and the control group

The difference between the experimental group and the control group was not significant in the study process. Individuals have relatively stable self-perception and evaluation, and changes in the short term may be difficult to detect. Through interviews, we conclude that the impact of chess training may not be obvious because the research time is not long enough.

5 Conclusion

There were significant differences in self-efficacy, self-esteem and social anxiety between the experimental group and the control group. We conclude that chess training has a significant impact on pupils' self-efficacy, self-esteem, social anxiety and other aspects, but this effect will only be highlighted in a long time and under a certain intensity.

6 Limitations

The research time is too short. The factors measured in this study are relatively stable and difficult to change in the short term. It is necessary to prolong the study time and do horizontal and vertical experiments. For example, continue to track the future development of students in the experimental group and the control group to see if there will be more and more differences between them.

References

1. Xie Jun .(2001).Effect of chess education on factors of developing intelligent and non-intelligent in adolescents. *Journal of Tianjin Institute of Physical Education*, Vol.16 No.1, Mar 2001, 44~46
2. Gao Qi-yang.(2017). Learning the theory of the development of children's psychology in chess. *Social Sciences in China Press*, July, 2017.
3. Huang He lin.(2007),The Effect of Go Games on Pupils'Mental Health. *Journal of Ningbo Institute of Education* ,Vol.9 No.3, Jun.2007
4. Huang He-lin,Kong Ke-qin & HU Yu.(2006). The Effect Research of Pupil's Personality Development by GO Games. *Psychological Development and Education* ,22(2), 12-17.
5. Bilalić M, Mcleod P,& Gobet F. (2007). Personality Profiles of young chess Players. *Personality & Individual Differences*, 42(6), 901-910.
6. Pan Jingsheng(2016).A Preliminary Study of the Relationship between Chess Curriculum and Students'Personality Development. *Journal of Mianyang Teachers'College*, Vol.35 No.5, May, 2016
7. Sigirtmac, A. D. (2012). Does chess training affect conceptual development of six-year-old children in turkey?. *Early Child Development & Care*, 182(6), 797-806.
8. Moxley, J. H., & Charness, N. (2013). Meta-analysis of age and skill effects on recalling chess Positions and selecting the best move. *Psychonomic Bulletin & Review*, 20(5), 1017.
9. Postal, V. (2012). Inhibition of irrelevant information is not necessary to Performance of expert chess Players. *Percept Mot Skills*, 115(1), 60-68.
10. Unterrainer, D. J. M., Kaller, C. P., Halsband, U., & Rahm, B. (2006). Planning abilities and chess: a comparison of chess and non-chess Players on the

tower of london task. *Br J Psychol*, 97(3), 299-311.

11. Aciego, R., García, L., & Betancort, M. (2016). Efectos del método de entrenamiento en ajedrez, entrenamiento táctico versus formación integral, en las competencias cognitivas y socioPersonales de los escolares. *Universitas Psychologica*, 15, Págs. 165-176.
12. Xu Ping.(2008).Go game affecting attention,volition and creation of children. Doctoral dissertation, *East China Normal University*.
13. Xu Ping.(2009).The Effects of Go Game on Children' Attention. *Psychological Science* 2009,32(2):364- 367
14. Yang Li.(2008) Study on the Influence of the Go Teaching to the Children's Self-consciousness. Doctoral dissertation,*Shanghai Normal University*
15. Zhang, J. X., & Schwarzer, R. (1995). Measuring of Optimistic self-beliefs: a chinese adaptation of the general self-efficacy scale. *Psychologia An International Journal of Psychology in the Orient*, 38(3), 174-181.
16. 17. Wang Xiangdong, Wang Xilin , &Ma hong.(1999). Manual of mental health assessment scale (Updated Edition). *Chinese Mental Health Journal*, 318-320. 248-249.